



"In Craftsmen's Terminology"

Construct your projects yourself

A practical small sized constructions guide using technical terminology

For amateur and advanced use



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i. Prologue

This guide-book was inspired by my successful attempt to build a barbeque station for me and my son.

We faced many difficulties to estimate the needed volume of materials for ground constructions and so I decided to write and issue a guide book in order to give specific directions on how to prepare various material mixtures for various constructions.

I started writing relevant articles which were published on my website and my blog since September 2010.

At times, friends suggested gathering all those articles in a book, giving me the motivation to examine thoroughly my articles and rewrite them so as to form a practical constructions guide.

In this book I estimate the needed quantities using known material units that are easily measurable such as carts, cans, liters, kilograms, etc. so that is understandable and easy to follow by the reader.

Lastly, I chose to issue this guide in an A5 size to be easier to print the pages you need and have them anywhere with you.

Note that newer versions of this book will follow enriching its content.

Author's Note:

1 kilogram (gr)= 2.20 pounds

1 meter (m) = 39.37 inches

1 centimeter (cm) =0.3937 inches

1 meter (m) =3.280 feet

1 liter (lt) =0.264 US gallons

4th ISSUE PROLOGUE

In this version I include the following chapters:

- 6.1. Introduction to plastering
- 6.2. Types of coating
- 6.3. Coating application process
- 6.6. Tips for better coating
- 7.13. Basic tile terminology
- 7.14. Basic rules before laying tiles

ii. Inscription

This book is dedicated to my children Despoina, Katerina and Theodore, in order of age, and especially to my son Theodore, who was the reason that inspired this guide book when we started to build a barbeque station in my cottage.

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1. CONCRETE CONSTRUCTIONS



1.1. Materials for a concrete mix



1. Quality C12/15 (former ~B160)

For a volume of 0.11 m^3 of concrete ($1 \text{ m} \times 1 \text{ m} \times 0.11 \text{ m}$) we use the following materials:

- 25 kgr of cement, i.e. a 25 kgr sack,
- 75 kgr of sand, i.e. three 25 kgr sacks,
- 150 kgr of gravel, i.e. six 25 kgr sacks,
- 17 lit of water, i.e. an oil container full of water or two 9 lit buckets of water (whichever is more available to you).

Having the dimensions of the construction you want to build and by using a calculator you can estimate the volume of materials you need.

You should know that small variances do not affect the material proportions.

It is always better to make some more mixture to avoid last minute solutions, and that is why I give you a volume of 0.11 m^3 (11 cm thickness) so that is enough for a volume of 0.10 m^3 (10 cm thickness).

1.2. Quality C20/25 (former ~B225)

For a volume of 0.11 m^3 of concrete ($1 \text{ m} \times 1 \text{ m} \times 0,11 \text{ m}$) we use the following materials:

- a. 36 kgr of cement, i.e. about one and a half of 25 kgr sacks,
- b. 70 kgr of sand, i.e. about three 25 kgr sacks,
- c. 140 kgr of gravel, i.e. about five and a half of 25 kgr sacks,
- d. 21 lit of water, i.e. two lit buckets and two 1.5 lit bottles (those of mineral water).

Having the dimensions of the construction you want to build and by using a calculator you can estimate the volume of materials you need.

You should know that small variances do not affect the material proportions. It is always better to make some more mixture to avoid last minute solutions, and that is why I give you a volume of 0.11 m^3 (11 cm thickness) so that is enough for a volume of $0,10 \text{ m}^3$ (10 cm thickness).

1.1. Introduction to coating



Plastering is a building process (familiar to almost everyone) in which a surface is coated with plaster. That surface is usually vertical walls, which can be either outdoor or indoor.

It is a useful and important process, which protects the frame of the building (main structure) as well as the walls (usually brick ones) of the building from all adverse weather conditions (over-exposure to the sun, severe heavy rain etc.) and other dangerous conditions, such as air pollution (exhaust gases) and acid rain.

Since it is a fairly common process, all building technicians say they know this process well, something that is not necessarily true and could lead to poor workmanship or mistakes. To avoid such dangers you should find a qualified team of building technicians to carry all construction tasks...

As we mentioned above, plastering is a process that works as a protective mantle for the building against all adverse weather conditions. It does more than that! It is also a fire protector, which means that it works as a first line of defense to delay the damage of the walls, which is very important, especially if it's (load)-bearing. Lastly, regarding protection, by plastering we can give an

additional intertemporal feature to the building, especially if we use plaster armed with plaster fiber agents.

Apart from additional protection, by plastering we can succeed aesthetic enhancements. Mostly, we get the chance to cover any faults on our walls, piping and wiring, even small alignment mistakes during the construction process. Besides, we can decorate the wall, since we can give it the texture we prefer, from a smooth surface to a grainier one. Also, by using colorful plaster, we can color our wall with our preferable color and skip painting it afterwards.

1.1. Tile floors laid with glue



We need:

1. Glue for gluing.
2. A trowel to apply the mortar and use its grip to strike the tiles during flooring.
3. Tile spacers to keep the tiles apart from each other and avoid gluing together.
4. A tile cutter (borrow one, they are expensive).
5. Level.
6. A special comb spatula for tile flooring. Firstly, you apply the cement mortar with a trowel and then make a pass with the comb spatula in order to create grooves which help free the air under the tiles while we strike them with the back grip of the trowel to make the tiles fit well.
7. An electric mixer or a manual one.
8. Many mops!

Tiles are laid on concrete floors.

Plaster from the bottom of the walls is removed and then the walls are cleaned carefully. The new layer is applied from wall to wall.

When the concrete has hardened, the surface should be cleaned, spayed with water and checked for its level. As level references, we use either front door's thresholds or the marks on the door frames, if it is an open-plan floor.

Using a level and a wooden plank, we lay tiles on the concrete layer in several places, which we use as guides. We lay them in such a way, so that the level of their surface equals to the final level of the floor.

We start laying from the front door's threshold or door frame (if there is no threshold) and continue all the way in.

Basic rules for laying floors with glue

1. We remove the dilapidated surfaces, if any, and correct the underlay.
2. We clean thoroughly the underlay from dust, paint remains etc.
3. We use an electric mixer to mix the glue with water, so that we have a well homogenized mixture with no clods whatsoever. For water-mixture analogies follow the instruction given by the glue manufacturer.
4. The teeth of the comb spatula you will use for tile flooring should depend on the size of the tiles. For small tiles and for laying tiles on vertical surfaces we use comb spatulas with small grip and teeth with tight gaps between them.
5. We act accordingly for big tiles and great glue thickness.
6. The maximum glue thickness should be smaller or equal to the thickness of the tiles.
7. For heavy tiles and granites or stones we choose comb spatulas with relatively small teeth and fill them properly with glue so that there is no gap in glue's mass. The weight of the tile causes pressure on its surface and glue's tension to fill the gaps can cause tile disposition.
8. Joints' thickness depends on the tiles' size and the aesthetic we would like to give to our floor.

It is recommended:

For 10x10 cm tiles, joint thickness: 0-2 mm internally and 1-2 mm externally.
For 20x20 cm tiles, joint thickness: 2-3 mm internally and 2-4 mm externally.
For 30x30 cm tiles, joint thickness: 3 mm internally and 3-5 mm externally.
For 40x40 cm tiles, joint thickness: 4-5 mm internally and 5-7 mm externally.
When you start laying tiles on a floor, apply as much glue as you can so that you can lay tiles on, before glue forms a crust on its surface (7-15 minutes is an approximately good time to complete laying).

9. Every tile edge should be exactly opposite to the next tile's edge. Apply a generous quantity of glue so that the bottom side is fully covered and glue engorges from it when is pressed on the floor.
10. Using a wooden plank and a level and according to the guides we have placed, we check the level of each tile. If we have a horizontal level after laying the first lines of tiles, we can continue checking with the level, using as references the tiles next to the new ones.
11. For surfaces with inclination on some parts of the floor (in the bathroom, for example, we have an inclination towards the siphon), we place string guides indicating the preferable inclination and lay the tiles according to those guides and checking their level with a wooden plank.
12. Every tile is finally placed with a slight strike using the back grip of a trowel and simultaneous check of its level.
13. When a tile is laid, we put tile spacers in every corner so that the joint is tight and avoid tiles gluing up together.
14. If the tiles close to the wall don't fit well, we cut them and place them with the cut side facing the wall.
15. The floor-finish with the wall is completed by laying tiles of usually 10 cm height (baseboards), glued with mortar vertically to the floor.
16. The buckets we use for materials mixing should be clean and made out of materials which clean easily. Using, for glue mixing, metallic and not properly galvanized containers or containers with flaws (rust), can affect the material due to alkali substances and pollutants existing in those containers.

17. Every time you call it a day, be sure you clean thoroughly all your tools. Spatulas and buckets with material remains from former constructions could cause change in color of sensitive materials (for example, grout). Dust transfer in form of clods due to former construction remains can affect the appliance or behavior of the material while working with it (dirt in joints, air pockets in the mass of the tiles glue).

Pointing – stucco work

For stucco preparation, follow the same process as for glue preparation. Use a clean container (bucket) in which you will complete the mix. Put the recommended quantity of water and then start to pour cement. Use a mixer to mix the materials.

1. Firstly, joints should be cleaned thoroughly, so that stucco has the best adhesion possible.
2. Remove carefully all tile spacers (used in the tile laying process) as well as other remainings such as glue remainings, wedges etc.
3. It is good to wet the surface with a sponge, but not leave any water in the joints because it could affect not only the color of the stucco but its adhesion too.
4. Pointing (stucco work) is done when glue has dried and tiles are well attached to the floor.
5. Then, in order to fill the joints completely and reach the level of the tiles, we apply a new thin layer of the same stucco and work intensively with a spatula.

Tips for better results

1. In order to keep the right level, use a string as a guide so that you can follow it easily. Of course, you must check the level first before placing the string, don't place it in random. Measure the level at one place and tie a string from one wall to its opposite, lay all tiles according to that height.
2. Tile spacers are placed at the corners, between every tile so that all tiles have the same distance between them. When glue has dried, remove them.
3. I suggest you strike the tiles with the back grip of a trowel, very carefully until they are in the same level with their neighbor tiles.
4. Pay attention on the way you handle the tiles you have cut. DON'T attempt to put your hand on the cut side, you could get hurt.
5. If you lay tiles on stairs too, make sure you place the tiles with their cut side towards their inside wall. Still, if, for some reason, have to place them with their cut side shown, don't forget to sand that side thoroughly so that it is not sharp.
6. When laying a bathroom floor, it is wise to make a plan first on how to lay the tiles, so that you don't step on them when you are close to finish laying.
7. The smaller the tile spacers are, the harder it is for tiles to be leveled, because their structural strength weakens and even small deviations will be noticeable.
8. Tile cutters are expensive and it would be a waste to buy one, unless you are a professional technician. Try to borrow one from someone you know and ask them to show you how to use it, for example how to cut a tile exactly on their cutting mark with no deviations whatsoever.

1.2. Glued floors



On a concrete floor we lay a cement underlay on which the final floor is glued.

Material analogies are:

1 cement: 2 sand (analogy by volume): 27 lit of water per sack of cement.

If we want analogies for a “load” of mortar we need:

1. One and a half 50 kgr sacks of cement (75 kgr)
2. Nine 25 kgr sacks of sand ($\sim 0,125 \text{ m}^3$ or 225 kgr) – analogies by volume 1:2
3. Four and a half 9 lit buckets of water (40 lit), but add as much water as needed to make a malleable mortar, not too watery.

Instructions

We follow the same process as described in chapter 7.6 “Cement floors” and use the same materials as mentioned in it.

Layer thickness, depending on its use, usually ranges from 1 to 3 cm – for cases of intense use.

The underlay must be totally smooth because the last floor is glued on it using special glue.

The final floor can be laminate, cork, plastic, wall to wall carpets etc.

The final level of the cement layer must be of such height so that we lay the final glued layer at the final level we have chosen for this particular floor.

CLADDINGS



2.1. Emulsion paint on new or hydro chromed walls



In order to paint new or lime or glue hydro chromed walls with emulsion paint, we have to do some preparations which are described below:

1. Our first job is to repair all big damages. For internal walls we use plaster and water. For external walls we use white cement with primer for emulsion paints with stucco putty or liquid tile glue diluted in four parts of water.
2. Then, by using an emery-paper float, we scrub all the surfaces we want to paint (the more we scrub, the better the surface will be).
3. We dust and with a roller or brush we apply the primer we've selected. We must paint the surface thoroughly with primer, otherwise, if there are any blank spots left they will create color differences.
4. After primer coating, we must not scrub the walls again, otherwise we will have to repeat primer coating.

Metallic surfaces which will be painted with emulsion paint, is necessary to be painted with special metal primer so that they won't rust.

Primer coating means the end of preparations and so, we can go on to painting with emulsion paints. We use acrylic stucco and emulsion paint and we can apply them on plastered walls or plasterboard walls.

The wall's stylization quality is selected according to the quality of the desired final result and according to the given budget.

Process:

1. Scrubbing of all surfaces (plasters and plasterboards).
2. Appliance of three hands of stucco putty. (Stucco putty is a powdery mortar (stucco) which, once mixed with water, creates a viscous paste perfect for wall coating (plaster, cement, and wallboard). By coating wall with stucco putty we manage to fill its pores and make it smooth).
3. Scrubbing of all the stucco putty surfaces.
4. Primer coating with acrylic primer.
5. Fist hand painting with emulsion paint.
6. We lay light on the wall using lamps and repair with stucco any flaws.
7. Scrubbing.
8. Three hands painting of surfaces using two different rollers to create a smoother surface.

There are two ways to apply stucco putty:

1. Appliance of two hands of stucco putty. The painter makes the first layer of stucco putty on the walls. After this layer has dried he applies the second one right on top of the first. This is the most usual way to work with stucco putty and exists in almost every apartment that construction companies have for sale.
2. Appliance of three hands of stucco putty. The painter makes the first layer of stucco putty on the walls. After this layer has dried he applies the second one right on top of the first. When this layer has dried too, he applies the third hand on top of the second one. This way offers a better finish on the walls than the previous one.

Stucco putty categories:

There are the following stucco putty categories:

Acrylic stucco putty. Powdery stucco putty enriched with acrylic resin. It is used in internal spaces.

Enhanced acrylic stucco putty. Powdery stucco putty enriched with greater amounts of acrylic resin. It is used in both internal and external spaces.

Resinous cement stucco. Coarse stucco putty enriched with acrylic resin of even greater amounts than the previous two categories. It is used in external spaces.

Generally, the price of stucco putty depends on its category and the quantity of acrylic resin it contains. The more acrylic resin it has the more resistant it is, and more expensive of course.

You should remember this: Stucco putty that contains a great amount of acrylic resin becomes hard when dried on the surface of the wall. The next day, when we will have to scrub that surface, it won't be easy because of its hardness. That will result in not having the desirable smooth surface we were expecting.

It is recommended to prefer common acrylic stucco putty for internal spaces where the surface finish is important.

There are several stucco putties in the market to choose.

2.2. How to apply primer



In this chapter I will give you some information about primer.

Primer is a thin, watery, transparent material, which creates an insulated surface when applied on walls, making them ready to be painted with emulsion paint.

There are three categories of primers

1. **Water primer.** It's diluted with water. Water primer is the first material of the color's ingredients (it is the binding material, also known as binder). It's the most important material regarding emulsion paints and because of that we have the formation of a color film on walls. Think of that as a box full of glue and the rest paint materials as wood-chips. If we take those wood-chips and try to cover a wall, it is more likely to have a bad result. But if we take those wood-chips and mix them with the glue and then try to cover a wall, then we will have a much better result than before. Wood-chips will be on that wall and stay there for a long time. Now, you understand why the first material is called "binder" too (binding material). In good emulsion paint, binder constitutes almost 25% to 30% of its composition. It is used on internal surfaces.

2. **Solvent-based primer.** It's diluted with white spirit. It is better than the water primer and is used on both internal and external surfaces.
3. **Silacryl primer.** It is a relatively new primer which offers a smooth finish and great covering capacities, used on both internal and external surfaces.

It has the ability to penetrate deeply in the wall (about 7mm) and insulating it. At the same time, it's water-vapour permeable. That means that it lets the hemmed humidity to get out on the surface (the first two primers are not that water-vapour permeable as silacryl primer is). In this way, walls are totally insulated up to 7 mm deep.

Why is it necessary to apply primer on new walls before painting?

New walls (covered either with plaster or with stucco putty) have the same characteristics: They are not insulated.

Compare walls to a sponge. Once you pour water on the sponge, water enters within the sponge. The same thing happens on walls. Water enters through the walls' pores and reaches deeply in its interior.

Try to sweep the new wall thoroughly with a broom until there is no dust on it. Can you do it? Apparently, no. No matter how well you sweep it, some dust will still remain on its surface. This happens because, when the broom touches the wall, it doesn't remove dust but small parts of the wall which become detached in the form of dust. Conclusion: new walls are not 100% stable.

When painting a surface, they shouldn't fulfill any of the above characteristics. Primer is the material that overcomes the above characteristics: it insulates and stabilizes the wall.

Primer and primer coating

Primer is produced by mixing 1 kgr of primer for emulsion paint and 4 to 5 kgr of water.

1. We must paint the surface thoroughly with primer, otherwise, if there are any blank spots left they will create color differences.
2. Primer is applied with a roller or a brush and must be, also, used on surfaces where there are building materials that will be painted with different colors.
3. Metallic surfaces which will be painted with emulsion paint, is necessary to be painted with special metal primer so that they won't rust.
4. On surfaces painted with any form of lime, we must, necessarily, apply a primer layer otherwise we won't manage to paint them no matter how many hands of emulsion paint we apply. That is why we pay extra attention to any drops of lime color that may have dropped while painting the ceilings.
5. When we have completed all preparations needed, we make stucco (special for emulsion paints) and repair any surface flaws.
6. When those repairs are done, we paint them and then we apply the first hand.
7. If the surfaces haven't been covered satisfactorily we apply a second hand in the same manner we refer to in this chapter.
8. If there are any pipes and radiator devices we can paint them with emulsion paint giving that all preparations needed have taken place.

3. WOODEN FRAMES' PAINTING



A great painter, Mr. Nikos - may he is well -, gave me some advice many years ago, which I share with you today. In this chapter I will refer to painting of buildings' wooden frames, such as doors and windows.

Wooden surfaces' painting is divided in three categories:

1. Common oil paintings.
2. Coated oil paintings.
3. Coated oil paintings with enamel paint.

iv. SOME WORDS ABOUT THE AUTHOR

Pantelis Theodore Papakonstantinou was born in 1948 in Pagrati. His mother was a refugee, originating from Antalya, Anatolia (Mikra Asia) and his father was a second generation Athenian, originating from mountainous Roينو Arcadias.

He studied in the 3rd Primary school of Pagrati, known as “Dragatsi”, and completed his secondary and high school studies in the 1st Secondary and High school of Aigaleo.

In 1966 he enters the School of Civil Engineering of the National Technical University of Athens in terms of a scholarship and graduates in 1971.

He served in the Navy as reserve officer from 1971 to 1974, and, after his service time was over, he worked for about two years in big engineering companies, gaining valuable experience in important projects.

In the meanwhile, he starts his own business. His office deals with private projects and designs of public projects too.

In 1979, he was elected Municipal Councilor of Aigaleo Municipality and in 1982, President of the Municipal Executive Board.

From 1982 to 1987, he serves as member of the Management Board of Emporiki Bank’s affiliate of “Greek Company of General Operations”, which managed the shipyard of Perama (formerly owned by Andreadis).

From 1983 to 1987, he works as consultant for the Local Union of Municipalities and Regions of Attica on the project “Operation for Urban Reconstruction” which was introduced by the late Antonis Tritsis.

From 1987 to 1989, he works as consultant for the Prefect of West Attica, concerning urban designing issues.

From 1995 to 2008, he is an independent contractor of Emporiki Bank, focusing on commercial value assessments and evaluations of any properties.

He is married to Eleni and has 3 children: Despoina, Katerina and Theodore.

iv. MORE BOOKS OF THE AUTHOR

IN GREEK LANGUAGE

1. In craftsmen's terminology.
2. The secret of succeeding as an Engineer – Part 1.
3. The secret of succeeding as an Engineer – Part 2.
4. Necessary documents to issue a building permit or a good "compass" (For building approval and building permit).
5. What a topographical plan should include.
6. How coverage is estimated, in a coverage diagram.
7. How structuring is estimated, in a coverage diagram.
8. How semi-outdoor areas and galleries are estimated, in a coverage diagram.
9. How heights are estimated, in a coverage diagram.
10. How necessary parking spaces are estimated, in a coverage diagram and other relative issues.
11. How planting is estimated, in a coverage diagram.
12. How Delta is estimated, in a coverage diagram.
13. How volume coefficient is estimated, in a diagram.
14. How virtual solid is estimated, in a coverage diagram.
15. What should be included in a plot, cut, view of an architectural study.
16. Rules for property charges of apartment blocks.
17. Heating expenses of apartment blocks.
18. Elevator expenses of apartment blocks.
19. Millimeters allotment table of horizontal properties.
20. Stores' Legal Operational Authorizations – Volume I – Of Health Interest.
21. Legal Operational Authorizations of Health Interest Stores – Volume I – Legal Operational Authorizations of Various Stores
22. Legal Operational Authorizations of Health Interest Stores – Legal Operational Authorizations of Various Stores – 1st Complete Edition – Volume I & II.
23. Legal Operational Authorizations of Hotel Accommodations.

v. EPILOGUE

I decided to publish my book “ΜΕ ΤΗ ΓΛΩΣΣΑ ΤΩΝ ΜΑΣΤΟΡΩΝ - In craftsmen's terminology” in form of an e-book, chapters of which I publish on my blog, under relevant tags: <http://www.advice-4u.blogspot.gr> ,

A practical small sized constructions guide using technical terminology For amateur and advanced use

Known material units are used, easy to be calculated and recognized, such as kgr, lit, buckets, and carts. Thus, the reader can easily estimate the quantities of materials needed. I chose to issue this guide in an A5 size to be easier to print the pages you need and have them anywhere with you.



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